

Advancing Resource Management at Verizon (Middleton, MA)

1. OVERVIEW

Verizon Communications, formed by the merger of Bell Atlantic and GTE, is one of the world's leading providers of high-growth communications services. Verizon companies are the largest providers of wireline and wireless communications in the United States, serving the equivalent of nearly 125 million access lines and 28 million wireless customers. In the United States, Verizon has a wireline presence in 31 states, and a wireless presence in all 50 states plus the District of Columbia and Puerto Rico. In addition, Verizon has operations in 21 countries in the Americas, Europe, Asia and the Pacific, and a presence in a total of 40 nations. Verizon is also the world's largest provider of print and on-line directory information.

A Fortune 10 company with more than \$65 billion in revenue (2000) and more than 259,000 employees, Verizon is comprised of four operating divisions. The first three—Domestic Telecom, Domestic Wireless, and International—provide telecommunications services. The fourth, Verizon Information Services, is a world-leading print and online directory publisher and content provider.¹

This case study focuses on the Information Services office building in Middleton, Massachusetts (henceforth referred to as Verizon). This 266,000 square-foot facility houses approximately 700 Information Services division employees, and serves as its New England headquarters.

2. BASELINE SOLID WASTE AND RECYCLING SERVICES AND LEVELS

Verizon has contracted for standard trash hauling/disposal and fiber recycling services at its Middleton facility. Two separate, unaffiliated contractors are responsible for providing these services. For its trash services, Verizon is provided with an 8-yard compactor for all waste, which is serviced 6 times per month by the contractor on a regular schedule.² It is estimated that Verizon disposes of approximately 144 tons annually³ under this contract. The custodial service is responsible for consolidating trash from all floors and transporting this material to the compactor at the loading dock.

For its recycling service, a separate contractor provides pick-up of recyclables on an “as needed” basis, and supplies large 40-gallon recycling bins for paper and hampers for larger items such as corrugated cardboard and phone books. The custodial contractor is responsible for internal transport of recyclables to the loading dock, and also hand-sorts material according to different fiber types when it perceives the market prices for

¹ Total domestic circulation of its print directories is 110 million copies, while total international circulation is 37 million copies.

² Mondays and Friday of one week, and Wednesdays the next week.

³ This assumes 6 pick-ups per week, and an average compacted density of 500 lbs./cubic yard on a full 8-yard compactor (Note: density values range from 500-1000 lbs./cubic yard. Sources for density: USEPA Solid Waste and Emergency Response, 1997, *Measuring Recycling: A Guide for State and Local Governments*, EPA530-R-97-011, and National Solid Waste Management Association Technical Bulletin 85-6, *Basic Data: Solid Waste Amounts, Composition and Management Systems*). This data compares favorably with historical data of 120 tons disposed in 1998, given Verizon's recent growth.

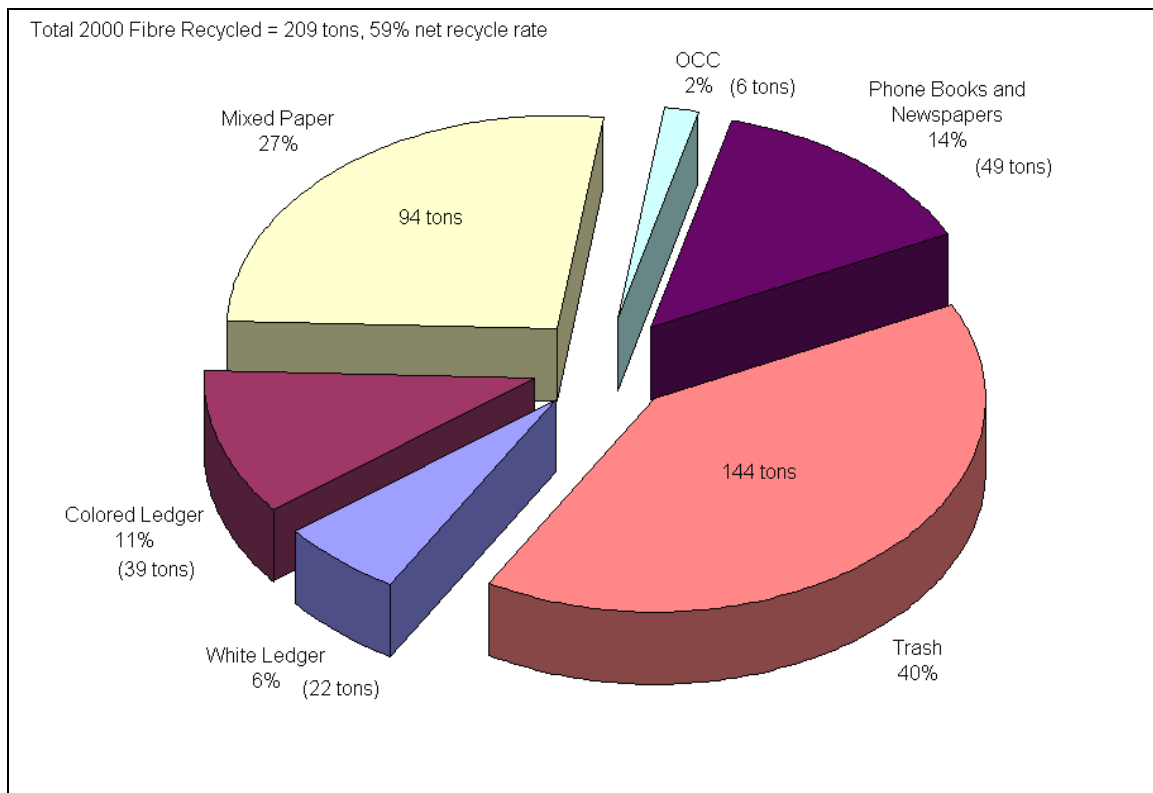
commodities warrants the effort. These prices for various fiber types are adjusted by the contractor from month to month, and decreased significantly towards the end of 2000 with weak secondary fiber markets. This accounts for the decision of the custodial contractor not to sort paper by grade in the last four months of 2000, commingling all recovered paper as “mixed” grade. In total, 209 tons of fiber was recycled in 2000, for a net recycle rate of 59% (Figure 1).

A final party in Verizon’s recycling program is the Buildings and Real Estate division, whose responsibilities include program management and oversight of trash, recycling, and janitorial contracts, employee training, regulatory issues, compliance, and communications. Verizon also recycles small quantities of fluorescent lamps, batteries, and printer toner cartridges.

Figure 1: Verizon Waste/Recycling Profile, 2000

(Note: All fiber is recycled)

*OCC = Old Corrugated Cardboard



3. BASELINE CONTRACTS AND COMPENSATION

In October 1998, Verizon entered a new three-year trash contract emphasizing minimal service with an on-call component to reduce costs and service levels. Under the current contract (Table 1), Verizon pays a bundled monthly fee, which includes compactor rental, four pick-ups per month, and all disposal fees. A charge for additional pick-ups applies. The present contractor does not report disposed tonnage data, since tip fees are bundled

in the monthly service charge. The total trash costs in 2000 of \$9,600, equivalent to \$67 per ton, are shown in Table 1.

Table 1: Verizon Trash Costs, 2000 (and Savings from Pre-1998 Contract Structure)

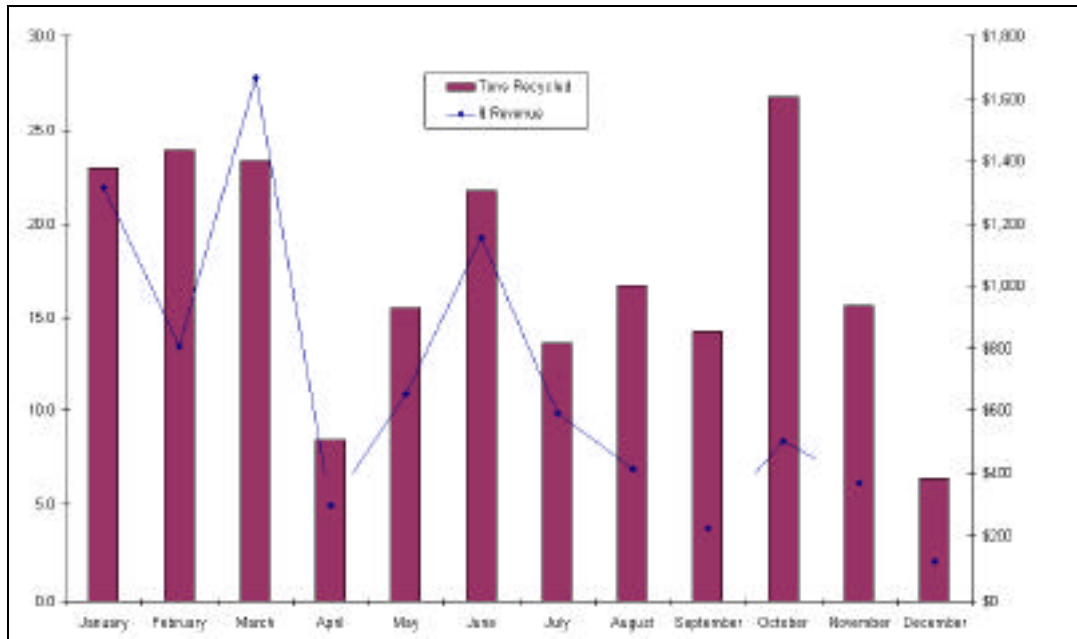
	Charge Element	Charge Unit	Unit Cost	# Units in 2000	Total Cost
Current Contract	Trash Service Charge	Month	\$550.00	12	\$6,600.00
	Additional haul	per haul	\$125.00	24	\$3,000.00
2000 Trash Costs					\$9,600.00

For its recycling contract, Verizon pays no fees, and receives a portion of the commodity value of the fiber it recycles, based on monthly markets. This is determined by prices for different fiber types specified by the recycling contractor in its monthly receipts. In 2000, Verizon received \$7,600 in revenue on 209 tons of fiber recycled (Table 2, Figure 2). Comparing trash services costs to recycling revenues, the total program cost for Verizon's trash and recycling services in 2000 was \$1950. Costs of labor for recycling (and trash) collection and sorting are borne by the custodial contractor, who is simply paid a flat management fee for all of its duties, including recycling. However, the custodial service receives no direct financial incentive for this service, such as a portion of the recycling revenues.

Table 2: Verizon Recycling Levels/Revenues by Fiber Type, 2000

Fiber Types	Tons Recycled	Credits (\$)	Average \$/ton
White Ledger Paper	22	\$2,492	\$97.70
Colored Ledger Paper	39	\$2,521	\$64.64
Mixed Paper	94	\$2,638	\$28.06
Old Corrugated Containers (OCC)	6	\$0	\$0
Phone Books and Newspapers	49	\$0	\$0
Total	210	\$7,651	\$36.43

Figure 2: Verizon Monthly Recycling/Revenue, 2000



4. OPPORTUNITIES FOR COST SAVINGS AND ENHANCED RECYCLING SERVICES

Verizon has achieved a high recycle rate of 59% at its Middleton facility⁴ for 2000. There remains some room for an RM contractor to profit from increasing recycling of a wider array of materials and diverting cafeteria organics from Verizon's waste stream. To provide an initial appraisal of the value and impact of this opportunity on recycling rates, Verizon's waste stream composition was estimated based on waste stream profiles developed by the California Integrated Waste Management Board⁵ for Standard Industrial Classification (SIC) code 48 – Communications. This data may not perfectly match the composition of the Middleton facilities current waste stream, but is a reasonable estimate based on best available information. Verizon's high fiber recycle rate may skew these figures such that the actual waste composition may have a marginally lower percentage of paper than assumed in this analysis. Tables 3 and 4 present three scenarios projecting incremental improvements from estimated baseline recovery rates that may be possible at Verizon.

⁴ Since trash tonnage is currently not measured/reported, this analysis assumes 500 lbs./cubic yard density for trash and a full 8-cubic yard dumpster at 6 hauls per month (144 tons); if one assumes 750 lbs./cubic yard, the result is a disposal tonnage of 216 tons and a recycle rate of 49%. At 1000 lbs/cubic yard, disposal tonnage = 288 and the recycle rate is 42%.

⁵ <http://www.ciwmb.ca.gov/WasteChar/BizGrpCp.asp>

Table 3: Effects of Increased Recycling on Verizon Contract Costs

Material	Scenario Name (1)	Capture Rate of Material (2)	Tonnage of Material Recovered	Avoided Landfill Tip Fee (3)	Avoided Hauling Cost (4)	Revenue (5)	Total Savings
Mixed Paper	Baseline (6)	74.8%	154.8	\$8,671	\$691	\$4,645	\$14,006
	Scenario 1	77.0%	159.4	\$8,926	\$711	\$4,782	\$14,418
	Scenario 2	83.0%	171.8	\$9,621	\$766	\$5,154	\$15,542
	Scenario 3	85.0%	176.0	\$9,853	\$785	\$5,279	\$15,916
Phonebooks and Newspaper	Baseline	69.0%	49.0	\$2,743	\$218	\$0	\$2,962
	Scenario 1	72.0%	51.1	\$2,863	\$228	\$0	\$3,091
	Scenario 2	76.0%	54.0	\$3,022	\$241	\$0	\$3,262
	Scenario 3	80.0%	56.8	\$3,181	\$253	\$0	\$3,434
Cardboard	Baseline	32.8%	5.9	\$331	\$26	\$177	\$534
	Scenario 1	45.0%	8.1	\$454	\$36	\$243	\$733
	Scenario 2	55.0%	9.9	\$554	\$44	\$297	\$896
	Scenario 3	70.0%	12.6	\$706	\$56	\$378	\$1,140
Plastic	Baseline	0.0%	0.0	\$0	\$0	NA	\$0
	Scenario 1	20.0%	3.9	\$220	\$17	NA	\$237
	Scenario 2	40.0%	7.8	\$439	\$35	NA	\$474
	Scenario 3	60.0%	11.8	\$659	\$52	NA	\$711
Organics	Baseline	0.0%	0.0	\$0	\$0	NA	\$0
	Scenario 1	20.0%	2.0	\$112	\$9	NA	\$121
	Scenario 2	40.0%	4.0	\$224	\$18	NA	\$242
	Scenario 3	60.0%	6.0	\$336	\$27	NA	\$363

- (1) Scenarios were developed based on capture rates for different materials within the different types of organizations, thus capture rates vary by organization. Incremental gains for a material with a relatively high capture rate in one organization would be more modest than for organizations with lower capture rates of the same material. Readily available sector based waste composition data was used to estimate the capture rates. When actual waste composition data was not available California Integrated Waste Management Board standards were used. Scenarios were calculated showing incremental gains for each chosen material. Materials such as paper, cardboard, glass, plastics and organics with readily available secondary markets were chosen.
- (2) Based on a total generation rate (trash disposed and recyclables collected as shown in Tables 1 and 2, and assumptions in footnote 4 (p.4).
- (3) Estimated on a conservative landfill tip fee of \$56/ton (from early 1998).
- (4) Estimated assuming 50% fixed, 50% variable costs using 1998 baseline hauling charges.
- (5) Assumes the lowest monthly market prices obtained by Verizon for different fiber types in 2000. We assume plastics and organics are revenue neutral.
- (6) Baseline calculated from 2000 numbers.

It is important to note that under the current contract structure, none of the savings from avoided landfill tipping fees would flow back to Verizon, since the contractor is being paid a flat bundled rate regardless of how much (or how little) tonnage is disposed. Some savings on hauling costs may be possible by further limiting the number of “extra” hauls, but these costs are small (<8%) relative to avoided landfill disposal costs. Section 5 details how Verizon may restructure its contracts to realize these cost savings from increased diversion.

The hypothetical cost savings in the scenarios represent estimates of “gain-sharing” that may be distributed in part or entirely to the contractor as part of a restructured compensation package to provide direct financial incentives for resource efficiency, and/or to fund internal recycling and source reduction initiatives. Moreover, the nature of compensation under a gain-sharing arrangement shifts the onus onto the contractor to identify and propose activities to increase recycling and source reduction. Table 4 summarizes the information from Table 3 and sums up the savings by Scenario.

Table 4: Summary of Potential Verizon Cost Savings for Increased Recycling of Mixed Paper, Cardboard, Plastics, and Organics

Scenario	Tonnage Material Recovered	Avoided Landfill Tip Fee	Avoided Hauling Cost	Revenue	Total Savings	Total Savings from Baseline	Savings as % of Total 2000 Contract Costs	Resulting Net Recycle Rate
Baseline	210	\$11,745	\$935	\$4,822	\$17,502	NA	NA	59.0%
Scenario 1	225	\$12,574	\$1,001	\$5,025	\$18,600	\$1,097	11.4%	63.6%
Scenario 2	248	\$13,861	\$1,104	\$5,451	\$20,416	\$2,913	30.3%	70.1%
Scenario 3	263	\$14,734	\$1,173	\$5,657	\$21,564	\$4,062	42.3%	74.5%

These scenarios focus on increasing recovery rates of the major recyclable/compostable components that are expected to make up Verizon’s waste stream. The second to the last column in Table 4 highlights the potential savings that could be realized using 2000 as the base year from which savings are measured. Jointly, avoided disposal and hauling costs, along with revenues from recyclables (Table 3 and 4) indicate potential costs savings of between \$1,100 and \$4,100 for the four waste streams identified. This represents between 11% and 42% of the affected year 2000 base costs of approximately \$9,600.

As the scenarios above suggest, Verizon and its RM contractor might initially focus on increasing recycling rates from the baseline for those materials with lower capture rates. However, there exists a point of diminishing return at which the resources required to achieve incremental gains in diversion may be uneconomical. At this point, source reduction opportunities and additional services will become the focus of the RM program. Thus, while RM typically begins with a focus on restructuring contracts to motivate increased diversion, the new compensation mechanism should create incentives for the contractor to move further upstream to focus on source reduction and other value-added activities (e.g., training of employees in material conservation techniques). The viability and attractiveness of RM to a contractor will depend on its ability to ensure long-term profitability through strategic and equitable partnerships with customers.

5. REALIZING COST EFFECTIVE RECYCLING AND REDUCTION POTENTIAL WITH RM CONTRACTING

Verizon has taken action to minimize what it pays on waste hauling and has achieved an impressive recycle rate of 59%, which can likely be attributed to the active role its

custodial service plays in spearheading the recycling program. Despite their success, several standard practices can be followed to systematically prepare for and implement an RM contract (Table 5). These practices align customer and contractor incentives for resource efficiency by establishing a compensation mechanism based on performance and continuous service improvement.

Table 5: Summary of Standard RM Practices

RM Practice	Description	Present
1. Establish Baseline Cost, Performance and Service Levels	Define scope and service levels	
	Identify existing contract and compensation methods	X
	Validate service levels with total costs	X
	Establish cost and performance benchmarks and goals	
2. Seek Strategic Input from Contractors	Convene pre-bid meetings with contractors to articulate goals and address questions	
	Allow or require bidders to submit operations plans for achieving specified improvements in existing operations	
	Establish quarterly meetings to report on performance and resolve issues	
3. Align Waste and Resource Efficiency Services	Coordinate, integrate, and formalize all contracts and services included in the baseline scope identified in Practice 1	
	Ensure that contractor has access to "internal" stakeholders that influence waste management and generation	
4. Establish Transparent Pricing for Services	Delineate pricing information for specific services such as container maintenance, container rental, hauling, incineration, etc. (This allows variable price savings, such as "avoided hauling and incineration" to flow back to generator and/or be used as means for financing performance bonuses).	
5. Cap Total Waste Management Costs	Constrain waste hauling/incineration service compensation by capping or changing to "on-call service."	
	De-couple contractor profitability from waste generation and/or service levels by setting decreasing cap based initially on reasonable estimates of current hauling and incineration service and costs as per practice 1.	
6. Provide Direct Financial Incentives for Resource Efficiency	Establish compensation that allows contractor to realize financial benefits for service improvements and innovations.	
	Assess liquidated damages for failing to achieve minimum performance benchmarks or standards.	

Based on the practices identified above, an assessment was conducted to determine the extent to which RM practices were part of existing contracting at Verizon (Table 5). Verizon has partially implemented the first RM practice, while the others have not been implemented as part of current contracting practices. The first practice—baselining current cost, performance, and service levels provides the foundation for implementing Practices 2-6, which are essential components of revising existing contracts or developing a competitive request for proposal soliciting RM services. There is potential for improvement to and/or adoption of remaining RM contracting practices to leverage recycling improvements as a cost neutral (or even cost saving) proposition for Verizon.

1. *Establish baseline cost, performance, and service levels.* The service baseline and cost structure for trash service has been well established and tracked by Verizon's custodial service. Currently, cost and performance levels are tracked and documented on the basis of a fixed fee structure tied to a minimum pick-up schedule with extra pick-ups on a call-in basis. However, since the contractor is not compensated directly on the basis of tonnage of trash hauled, Verizon is not provided this information in invoices, and does not monitor this data itself. Annual waste tonnage is estimated based on assumptions of the density of compacted materials and volume of a filled container when hauled. This makes it very difficult, if not impossible, to establish performance goals to minimize disposal, and similarly problematic to monitor progress.

Recycling levels are well established through monthly receipts provided by the recycling contractor. The receipts report the weight of fiber recycled according to five grades/types – white ledger, colored ledger, mixed paper, corrugated cardboard, and phone books and newspaper. If prices for higher grades of paper are below a certain threshold, the custodial contractor does not separate by paper grade, and the contractor picks up consolidated paper and reports and credits Verizon the “mixed” paper rate.

2. *Seek strategic input from prospective contractors.* Providing diversion goals and soliciting input in the pre-bid period would allow Verizon to explore the extent to which vendors are willing and able to identify and provide cost-effective improvements to existing recycling, source reduction, and other services. Currently, there is collaboration between Verizon and its custodial contractor, but no financial incentive to create a partnership to identify and take action on recycling, source reduction, and material utilization improvement activities.
3. *Align garbage, reduction and recycling services.* For the waste management and recycling elements of an RM program to be mutually reinforcing in support of resource efficiency goals, incentives for recycling should coincide with constraints on trash service. Current trash and recycling contracts are completely separate; as a result, there are no contractual mechanisms that synchronize services in support of resource efficiency goals. This creates a situation where contractors are essentially competing with each other, while the burden of recovering materials rests solely on Verizon and its custodial contractor. This divide limits the effectiveness with which trash is constrained and recycling and source reduction encouraged. The linchpin in the system, the custodial contractor, is currently a “gatekeeper” of disposal and recycling contracts, but is not provided a direct financial incentive on the basis of resource efficiency improvements across contracts. Under RM, all services are under the same umbrella and compensation is provided for aligning these services to achieve cost savings from increased recycling or source reduction and resulting decrease in disposal service.
4. *Establish transparent pricing for services.* Currently, Verizon pays a fixed-fee rate on its trash service, which includes container rental and 4 pick-ups per month, with 2 supplementary scheduled pick-ups per month at an additional charge. This gives rise

to lack of customer awareness of the service level provided, since the contractor simply provides one monthly charge with no tonnage data or service detail and makes it difficult to track or monitor waste reduction. A central component of RM is the creation of a payment structure such that resource efficiency savings can be shared between Verizon and its RM contractor. More specifically, Verizon could have its contractor break out costs for container rental, hauling, and disposal (tip fee/ton), such that any reduction in disposal creates savings for Verizon. In doing so, Verizon has control of the savings and can use these as it sees fit to provide incentives for other desired services improvements. Another advantage of doing so is that the added element of avoided disposal costs stabilizes and counterbalances volatility in commodity markets (see Figure 2), leading to a steadier stream of savings. As shown in Tables 3 and 4, reduced hauling or tip fees or incremental revenues from additional recycling volumes can be used to provide incentives to an RM contractor (per practice 6).

5. *Cap Total Waste Management Costs.* Verizon has limited its expenses for disposal service by using a smaller compactor, and negotiating a fixed-fee charge structure that includes all applicable expenses. This has provided marginal savings, but has decreased visibility of waste disposal costs and levels. An alternative approach to limiting compensation for disposal is to return to an “unbundled” service structure as per practice 4. However, unlike previous contracts, Verizon would establish a “cap” on total waste management costs from which savings are measured, which would be largely supported and made feasible by practice 6.
6. *Provide direct financial incentives for resource efficiency.* Currently, Verizon’s contractors simply pick up waste and recyclables that are internally managed by Verizon and their custodial contractor without taking an active role in resource efficiency. Each contractor (waste, recycling, custodial) has their own interest that may or may not increase diversion/recycling at Verizon, but none have a direct incentive or mandate to affect recycling, material utilization, or waste generation/disposal within Verizon. For example, the custodial service fulfills its material handling and recycling duties for the purpose of account retention and to meet contractual obligations, but has no formal performance benchmark or financial incentive to increase diversion. Likewise, the trash contractor has a business model based on disposal and additional trash service, which does not jive with Verizon’s recycling goals. Moreover, the recycling contractor simply picks up what is collected internally and has no ability to affect internal collection efforts or incentives to do so even though they may benefit with more recyclables.

Savings on avoided hauling and incineration fees and revenues received for recycled commodities achieved via practices 1-5 could, in part, finance a performance bonus for a single-source RM contractor who is in a “gatekeeper” position charged with affecting further diversion and/or source reduction. Optimizing recycling involves providing the right incentives to all of the recycling program stakeholders (Verizon employees, custodial service, other contractors), and revisiting these incentives to continuously advance source reduction as the limits of recycling are reached.

RM presents a timely opportunity for Verizon to use contracts to leverage cost-effective recycling and resource efficiency improvements. Using RM practices in its solid waste contracting would allow Verizon to align all services and shift the burden of managing multiple stakeholders to an RM contractor, whose compensation, and profitability, is tied to demonstrated resource efficiency improvements. By reinstituting more transparent pricing for trash services, incremental savings on decreased disposal flows back to Verizon and can be used to provide incentives for the RM contractor to achieve the next level of resource efficiency and improved services. This arrangement also provides the RM contractor with an expanded scope of work and the possibility of additional business opportunities.

It remains to be seen if there is an adequate “carrot” at the Middleton facility alone. Other Verizon buildings (i.e., Lynn and others) may be bundled to entice RM contractors. Ultimately, however, the determination of whether RM is viable will involve building RM practices into the next solicitation for trash/recycling services, seeing what the market can offer, and working with interested vendors to move beyond the status quo in waste service.